



Original research article

Energy, Anthropology and Ethnography: On the Challenges of Studying Unconventional Gas Developments in Australia



Martin Espig*, Kim de Rijke

School of Social Science, University of Queensland, Australia

ARTICLE INFO

Keywords:

Coal seam gas

Fracking

Environmental anthropology

Ethnographic methods

ABSTRACT

Over the last decade, unconventional coal seam gas (CSG) reserves in the Australian State of Queensland have been rapidly developed and include controversial extraction techniques such as hydraulic fracturing ('fracking'). Large-scale CSG projects primarily supply an international liquefied natural gas (LNG) industry. This has integrated regions of CSG extraction into global energy networks and wider societal debates about envisioned energy futures and climate change. In this article, we discuss how ethnographic research that aims to understand CSG or other energy developments holistically prompts ethnographers to rethink their 'field sites' and forces us to pay attention to global interconnections, methods, positionality, ethics, and the politics of representation. We explore these themes by first outlining some of the key developments in anthropology and ethnographic research over the past decades. This outline provides the groundwork for a discussion of the challenges arising during our own multi-sited ethnographic research in Queensland's Western Downs region. Our aim here is to spark debate about the shape of ethnographic energy research. With ethnographic methods increasingly used in social research, this discussion should be of broader interdisciplinary benefit. We conclude by highlighting the need for ethnographic reflexivity and contemplate the potential of interdisciplinary collaboration to address these questions.

1. Introduction

Over the last decade, Australia's natural gas industry has grown rapidly as part of a global 'gas revolution'. Converted into liquefied natural gas (LNG), this new capacity is primarily supplying overseas energy markets. To satisfy the soaring demand of six LNG trains, unconventional coal seam gas (CSG) reserves in the north-eastern State of Queensland have been rapidly developed at an unprecedented scale and include controversial extraction techniques such as hydraulic fracturing ('fracking'). This may ultimately lead to the drilling of over 20,000 gas wells in Queensland alone.

Unconventional coal seam gas (also called coal bed methane) is located in the dispersed cleats and pores of underground coal seams. Not contained in easily accessible reservoirs, it requires numerous wells to be drilled over a large area. To process the gas, associated infrastructure such as gathering lines, well pad access tracks, compressor stations, and water treatment facilities are also required. There are currently around 9000 operational CSG wells in regional Queensland that feed gas into the LNG processing and export plants operated by international consortia some 500 kilometres away at Curtis Island on the coast [1]. The collective footprint of such developments is

significant and in comparison to other extractive projects, such as conventional mining, CSG fields have diffuse geographic boundaries. These developments spread across the landscape as coal seams are explored, developed and connected to distant locations for export and energy production (see Figs. 1 and 2).

Recent CSG projects in Queensland thereby materially integrate regions of extraction into new and global energy networks. CSG developments also feature in wider public debates about envisioned energy futures and climate change. In this article, we examine these emerging interconnections and the methodological and conceptual challenges they pose for social scientific research generally and ethnographic research particularly. We explore these themes with reference to the methodological developments within anthropology over the last three decades and the ethnographic research we have been conducting since 2012 in the proposed and operational unconventional gas fields of Queensland's Western Downs region (see Fig. 2). This local government area has been the most intensely developed region in Australia so far in terms of unconventional gas projects.

We discuss how these CSG developments prompt us to critically rethink classic notions of the 'field site'. With thousands of residents affected in regions of extraction, and many more Australians outside

* Corresponding author.

E-mail addresses: m.espig@uq.edu.au (M. Espig), k.derijke@uq.edu.au (K. de Rijke).

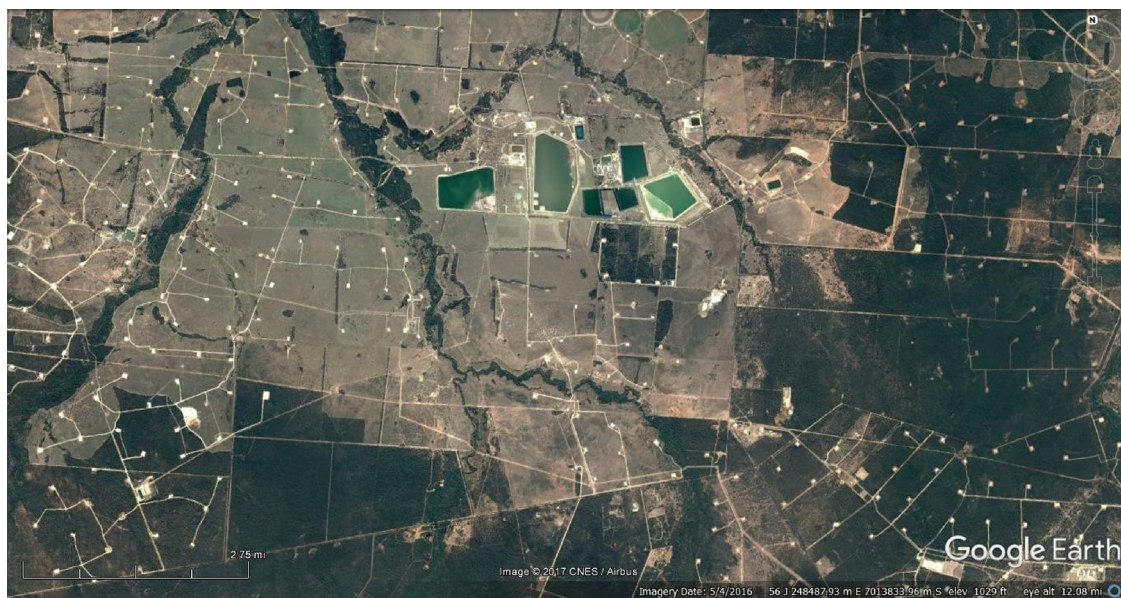


Fig. 1. A coal seam gas field in our study region. (source: Google Earth 2017).

those regions involved in public debates, we must carefully consider our methodological approach, which categories of persons are given attention, and whose voices might remain relatively silent. This requires reflection on the politics of ethnographic representation more broadly. We do so by contemplating ethnographic research practices themselves, including the epistemological and methodological challenges associated with complex energy developments. These challenges emerge in particular where research intends to understand the energy industry holistically. While this discussion draws on the specialist disciplinary development of anthropology, we aim to highlight some important methodological considerations for the benefit of a broader audience of social scientist using or considering the use of ethnographic methods. Rather than proposing a particular framework based on an exhaustive theoretical summary, we draw attention to relevant questions surrounding ethnographic and energy-specific research more generally.

Below, we first set out some of the basic tenets of ethnography. This provides the groundwork for more specific anthropological challenges that have emerged around ethnographic methods over the last decades, such as the tension between local and global connections, undertaking research ‘at home’, and studying ‘up, down and sideways’. We then relate these challenges to our research on CSG developments, including specific methodological and practical obstacles associated with demarcating our ethnographic field, research access and attitude, as well as ethics and methods. These discussions lead us to consider more broadly the politics of representation and societal conflict about CSG in Australia. In the interest of sparking intellectual debate, we combine relevant anthropological perspectives concerning ethnographic studies with insights from our own research to raise a number of methodological questions throughout the paper. We conclude by stressing the need for ethnographers to critically reflect on their research practices, their positionality and intellectual responsibilities. We also propose that interdisciplinary collaborations are one possible way to address the methodological challenges and limitations energy ethnographers face.

2. Anthropology and Ethnography

Throughout its historical emergence as an academic discipline, anthropology has been closely associated with qualitative monographs known as ethnographies, to the point where “[t]he primacy of the ethnographic is such that anthropology is almost synonymous with ethnography” ([2]: 81). To illustrate the discipline’s foundations and

distinctness, many introductory anthropology textbooks refer to classic ethnographies based on long-term fieldwork. Prominent among these classics is Bronislaw Malinowski’s ethnography *Argonauts of the Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea* (1922), which documents life among the Trobriand Islanders based on four years of continuous fieldwork and participant observation. Intensive fieldwork—often described as ethnographic research—is now a widely employed research method among many social researchers and even outside the social sciences.

Two decades ago, Giddens ([3]: 123) considered the future of anthropology and proclaimed that in-depth fieldwork is “a form of research method which is used across the social sciences rather than distinguish any one of them”. A survey of *Energy Research & Social Science* articles indeed suggests that many non-anthropologists follow Sovacool’s ([4]: 2) call for “more human-centred research methods” and frequently refer to, for example, ‘ethnographic fieldwork’ [5,6], ‘ethnographic observations’ [7,8], or ‘ethnographic data’ [9,10]. Within anthropology, a commitment to ethnography as both method *and* written end-product remains a crucial feature that is often seen to distinguish anthropology from other social disciplines and is also the threshold for ‘proper’ anthropological knowledge ([11]: 1–46, [2]).

However, such assumptions are contested among anthropologists themselves, with ongoing debates over definitions of ethnography and its relationship to anthropology [12–17]. Our intent here is not to outline in detail these important theoretical debates but to summarise some of the key methodological developments they have sparked over the last decades among anthropologists using ethnographic methods. In combination with a reflection on our own empirical research challenges, we thereby seek to address the focus of this special issue on the problems of method and open up the widely employed concept of ethnography to critical questions for the benefit of cross-disciplinary conversation in energy and climate change research.

For this purpose, we regard ethnography as a methodological ‘tool’ to understand humans’ diverse cultural practices. It entails a profound engagement with the lives of those we study and “involves making sense of the way people lead their lives in terms of the way they themselves see the world, things, and other people” ([18]: 34). As a particular way of looking and seeing [19], ethnographic research allows us to render complex and often different lifeworlds intelligible. Ethnographies commonly provide qualitative, holistic and in-depth insights into people’s quotidian lives. However, they are based on a great

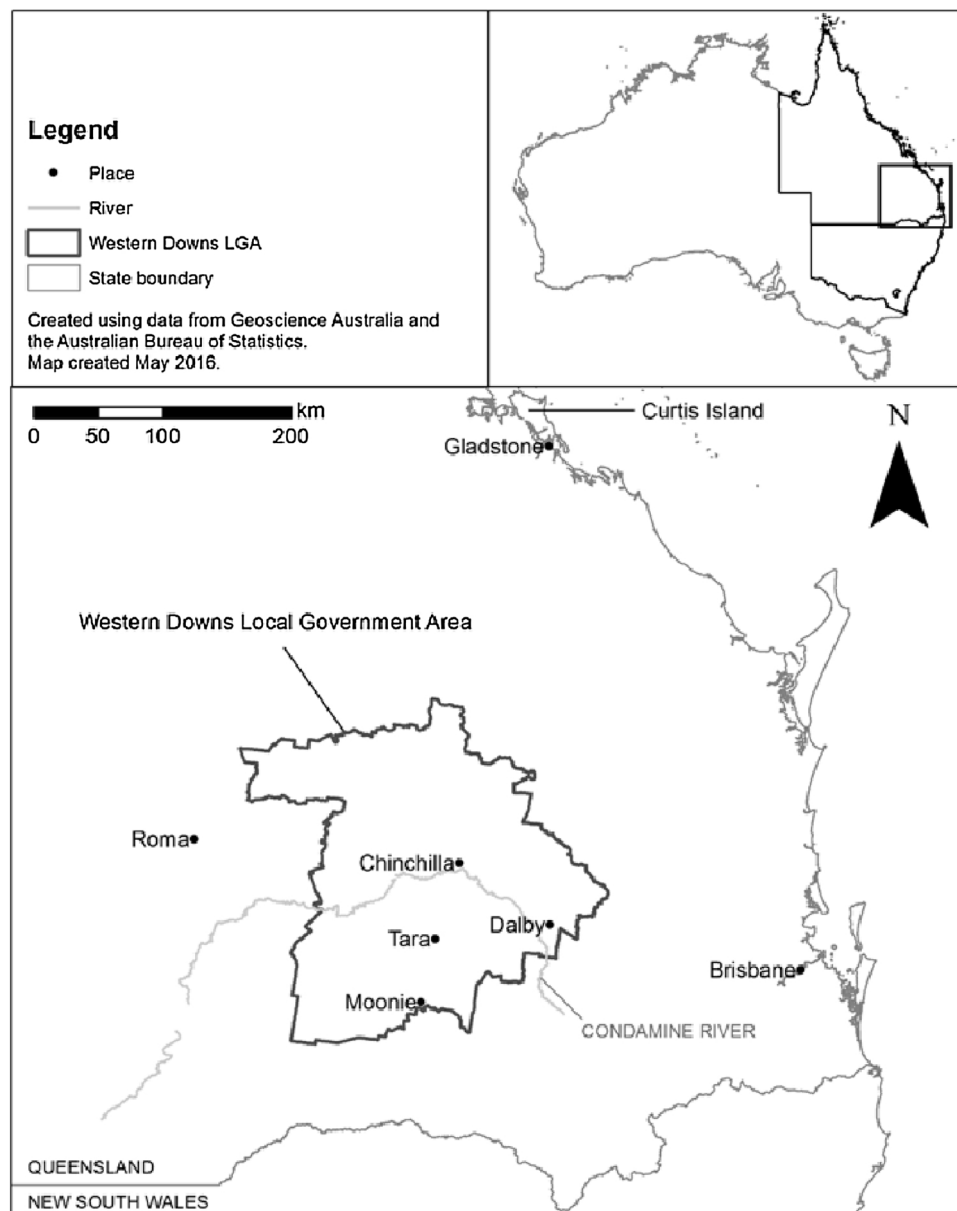


Fig. 2. Our study region: the Western Downs Local Government Area. Also note Curtis Island, the location of LNG processing and export facilities some 500 km to the north.

(source: [128]).

variety of research designs and data gathering techniques [20,21]. While this makes single definitions problematic ([22]: 1–27), ethnographies can be understood as comprised of “a family of methods involving direct and sustained social contact with agents, and of richly writing up the encounter, respecting, recording, representing at least partly in its own terms, the irreducibility of human experience” ([23]: 5). Using established methods such as participant observation, informal conversations and personal interviewing, these encounters are usually long-term, from a few months to years, and with members of ‘local communities’ [22,24]. Generally then, ethnographic research consists of going into ‘the field’, a prolonged ‘being there’, and the writing up of the resulting encounters ([25], [26]: 1–24, [11,27]).

This terminology tells us much about the epistemological and methodological foundations of anthropology, which, “more than perhaps any other discipline, is a body of knowledge constructed on regional specialization” ([11]: 8). Early ethnographies in particular were based on the researcher’s immersion in non-Western field sites commonly depicted as spatially and socio-culturally bounded. While the

nuanced insights of human-centred ‘local fieldwork’ are ethnographies’ key strength and contribution towards current energy and climate change debates, the assumptions underlying such perspectives also raise intellectual and methodological questions. To open up these questions and set the background for our empirical account, we discuss three important developments in ethnography over the past decades.

2.1. The Local & Global

The essentialising notion of territorially bounded ‘local communities’ whose cultures persist mostly unchanged over time has long been critiqued theoretically (e.g., [25,28,29]). In the contemporary world of transnational markets, instantaneous communication technologies and growing mobilities, it is necessary to address the growing trans-local interdependencies between people and places. At least since the 1980s, many anthropologists have sought to go beyond the archetype of single-site fieldwork through, for instance, ‘multi-sited ethnographies’ that address the interconnected conditions under which many social

phenomena now emerge [11,30–32]. This research agenda has developed into a growing body of anthropological literature on global ‘assemblages’ as anthropological problems [33], the friction of global connections [34], or the cultural contours of global capital and the New Economy [35]. The tension or friction between the local and global are unavoidable and a crucial component of contemporary energy research. Emphasising the need for energy ethnographies, Smith and High [36] argue in a recent *Energy Research & Social Science* special issue that “[t]he local and global, here and elsewhere, now and then, the concrete and the virtual are inseparable. Importantly, this inseparability is not merely theoretical, conceptual or abstract but rather ‘an empirical conjuncture’ that forms the reality we seek to understand” ([37]: 3). This, however, raises the question how ethnography as a family of methods that draw on situated and in-depth local encounters can be utilised to grasp these frictions.

In particular, while these accounts seek to understand the myriad of spatial and social local-global interconnections, the individual ethnographer is still required, intellectually and practically, to determine a comparably small number of feasible focus and study areas. We must therefore ask in our case, if complex socio-technical global networks of unconventional energy developments undermine assumptions about geographically and socially bounded ‘local communities’ that can be studied as relatively self-contained spheres of interaction and meaning, then where should we locate the resulting local-global interconnections? In other words, how might we study contemporary energy projects ethnographically and “write the global and local into one another” ([38]: 116)? We argue that this process involves the active—albeit perhaps not always conscious—establishment of the ethnographic field. The need to demarcate the field in some way is particularly salient in research that examines complex contemporary energy developments. Ethnographies must, in other words, make explicit with a high degree of reflexivity the ways in which choices in limiting the research field influence the research process [39]. This is, of course, not new. Such questions have been common since at least the so-called ‘reflexive turn’ of the 1970s, when anthropology started to face its European colonial roots and considered seriously the role in research of the ethnographer as a person, including aspects of class, race, gender and sexuality [40].

2.2. Making the Field at Home

As indicated above, the ethnographic field in early anthropology was often envisioned as a geographically and culturally distant site that requires the ethnographer to be spatially and intellectually mobile in order to understand the culture of a supposedly self-evident ‘Other’ ([11]: 12–15, [41,42]). In an endeavour to make the unfamiliar intelligible, fieldwork was understood as the process of physical and mental transition from the ‘here’ of the ethnographer’s familiar home to a culturally strange setting out ‘there’. What may have been a reasonable proposition when ethnographers departed from industrial societies to study small-scale, ‘non-Western’ communities, is problematic in the contemporary context of unconventional gas extraction for two reasons.

First, these energy developments occur on a large scale mainly in North America, China and Australia [43]. Many Anglophone anthropologists who engage ethnographically with domestic unconventional resource projects (e.g., [44–46]) move between different settings within their countries of residence, but will likely not encounter the same degree of difference as those departing for geographically and culturally more distant field sites. Within ‘at-home ethnographies’ [47–49], researchers are thus no categorical outsiders but also members of the research population. Ethnographies in these contexts cannot be seen as the study of the unfamiliar ‘Other’ by an outsider observer [42]. Instead, the ethnographer’s ‘insiderness’ and involved self becomes a crucial aspect of the research process [50,51]. Despite the valuable insight potentially gained from such an insider status, it appears that, “[n]o matter how achieved, strangeness seems to be important to ethnography” ([19]: 85). The at-home ethnographer therefore has to

negotiate ‘self-other relationships’ [42] and find ways of being (t)here, which includes the effective utilisation of existing socio-cultural knowledge without letting familiarity prevent unexpected insights. Thus, such research ‘at home’ too requires ethnographic reflection, including aspects of positionality and status as insider-outsider.

Second, the idea of homogenous local communities within which the ethnographer can discover the ‘native’s point of view’ [52] has largely been abandoned by anthropologists. However, some contemporary social energy research and many energy industry reports that are said to draw on ethnographic data still appear to uncritically regard ‘the local’ as a territorially-fixed entity upon which particular community views or cultural characteristics can be mapped [11,30]. This creates a deceptive synonymisation of geographic or political boundaries with socio-cultural commonalities and differences. Instead, as many ethnographers of energy or resource projects attest, the encountered empirical realities are usually less homogenous, with plural, sometimes decidedly polarised, local views that can also change over time. Under such circumstances, it is crucial to reflect on analytical concepts such as the ‘local’ and which interlocutors’ views inform subsequent analyses of, for example, local responses to specific energy developments. In other words, ethnographers need to assess the status of ‘community’, ‘local’ and who is studied as the ‘natives of choice’ [53,54]. These questions concern what anthropologists and others have termed the politics of identity and representation [55–57] and we will elaborate on their empirical implications further below.

2.3. Studying Up, Down and Sideways

Ethnography has its historical roots in field studies of small-scale, ‘non-Western’ societies. As Gupta and Ferguson ([11]: 8) propose, the “word *field* connotes a place set apart from the urban Going to the ‘field’ suggests a trip to a place that is agrarian, pastoral, or maybe even ‘wild’”. Such ethnographic pre-occupations with ‘studying down’—a focus on subaltern, economically and politically less powerful groups—were critiqued decades ago [25,58,59]. While many ethnographers often still work ‘on the ground’ with, for example, vulnerable minorities or activist groups, an increasing number of researchers have since the 1980s sought to simultaneously study ‘up’ and ‘sideways’ [60–62]. This involves ethnographies of social elites [63–65], work on complex organisations and corporations [66–70], or studying ‘through’ to trace processes of policy transformations and webs of power structures ([37], esp. Ch 5). Anthropologists have not only shifted the focus of their ethnographic gaze, but also fundamentally redefined researcher-participant relationships. For instance, through ‘para-ethnographies’ anthropologists have aimed to draw “on the analytical acumen and existential insights of our subjects to recast the intellectual imperatives of our own methodological practices” ([71]: 82). Others have engaged with research participants as active partners within ‘collaborative ethnographies’ [72–74].

In response to increasing globalisation and mobility, the scope of ethnographic enquiries and approaches has thus expanded. Many anthropologists recognise the need for more diverse methodological approaches to study contemporary social phenomena across different settings [75]. They have done so by employing a variety of established and novel methods, including ‘digital ethnographies’ [76]. Gusterson’s [38] notion of ‘polymorphous engagements’ captures this diversification. Yet, there are obstacles to this methodological expansion. Nader [60] noted four factors in particular that can limit the viability of studying up, down and sideways: *access* to certain individuals or groups, the ethnographer’s *attitude* towards powerful actors, her *ethics* regarding studying up, and *methodological* preconceptions about going beyond conventional participant observation and a prolonged ‘being there’ (also [11]: 1–46, [38,77]). These factors are as relevant to contemporary ethnographic research as they were almost five decades ago and provide a useful point of departure in thinking about the methodological challenges for ethnographies of complex energy

developments.

This brief overview has highlighted three developments in anthropology: considerations of the local and the global, ethnographies ‘at home’, and studying up, down and sideways. These can be seen to reflect shifting social fields since the early 1900s, changing disciplinary interests and theoretical advances, and the concomitant diversification of methodological approaches. An important point that arises from this discussion is the concept of the field. Rather than uncritically assuming pre-existing sites or communities, ethnographers actively demarcate their research fields in various ways. This process is less pre-determined and more open-ended than the traditional ethnographic terminology might suggest. In the following section, we reflect on the specific obstacles we face in our attempts to ethnographically study unconventional gas developments in Queensland, Australia.

3. Ethnographic Challenges and Lessons from Unbound Gas Fields

Throughout our research in Queensland’s gas fields, we faced numerous practical and methodological challenges. In the following, we elaborate on three salient aspects of our attempt to study these gas developments up, down and sideways. These correspond to the issues highlighted above: demarcating the field, access and attitude, and ethics and methods. These are likely of interest to those seeking to engage ethnographically with energy developments elsewhere. We do not suggest that these challenges are necessarily unique. Nonetheless, ethnographers of unconventional resource developments need to approach their research with a high degree of methodological flexibility and reflexivity because these challenges manifest on various scales. Here we aim to draw these out for cross-disciplinary benefit.

3.1. Demarcating the Field

CSG projects are characterised by their extraordinary geographic dimensions and socio-cultural, economic, and political complexities. Initially, we paid only peripheral attention to the transnational corporations and global trade regimes that significantly influence CSG developments and the lived experiences of those residing within localities of CSG extraction. Attempts to expand our perspective into the interconnections of the fossil fuel sector posed considerable challenges. As Appel et al. ([78]: 5 & 6) insightfully note:

The scale and reach of the [oil and gas] sector is in fact almost impossible to grasp fully in part because of the difficulty of deciding on its circumference and limits To enter this world as a scholar, or indeed as a lay person, is an unsettling and, in some respects, a deeply confusing experience. Immersion in the world of oil and gas tends to produce a profound sense of intellectual vertigo.

Individual ethnographers or small research teams who study broadly the various human dimensions of unconventional gas developments are confronted with this ‘intellectual vertigo’ that results from the pervasiveness of the global fossil fuel sector. Where to begin such research and what scope is achievable? Within our ethnographic research we started with an attempt to understand the various actor categories involved in the CSG controversy, including non-local, and often less readily available, industry professional or natural scientists that form part of the wider CSG sector. However, we are well aware that mapping out even the basic actors and their relationships constitutes an intellectually challenging task that is inevitable artificial to some extent. Delimitating our ethnographic field within the global-local assemblages formed by CSG therefore requires attention to our own limitations. Eriksen’s ([79]: 3) reference to the ‘glocal’ in his discussion of globalisation, environmentalism and ethnographic study foregrounds the importance of different social, temporal and conceptual scales. Defining research scopes and demarcating field sites that address these scales is perhaps the biggest challenge in the research of complex energy developments and climate change more generally.

However, even a ‘local focus’ does not suggest an immediately apparent field site. For instance, a central debate emerged over CSG projects’ cumulative groundwater impacts [80,44]. In Queensland, where up to 20,000 gas wells will be spread across the landscape, a State government agency models these impacts for an area the size of Germany (360,000 km²). Our focus region alone, the Western Downs local government area, covers over 38,000 km² within this Cumulative Management Area, which is comparable to the size of Switzerland (see Fig. 2). The government area is home to over 33,000 people and underlain by interconnected aquifers. The number of people affected by CSG developments is thus considerable. In June 2015, nearly 2200 landholders in Queensland had negotiated almost 5000 so-called Conduct and Compensation Agreements with CSG companies for direct impacts to their properties [1,81]. A much higher number of the region’s residents are affected by broader economic, environmental and socio-cultural changes [1,81–83]. The CSG industry’s scale is thus clearly a challenge for those trying to understand and practically manage the changes (cf. [84]), but also for ethnographers who might aim to study the sociocultural dimensions of unconventional gas developments among thousands of diverse actors across a large area. Even when employing a multi-sited approach, what localities and research questions might be deemed appropriate to gain nuanced in-depth insights ([30]: 206–208)? Which actor groups do—and can—we recruit and engage with in ways that are practically possible and intellectually, ethically and morally justifiable? And lastly, how can the knowledge claims we subsequently make be truthful to the diversity we face?

In a sense, ethnographers face similar problems to the groundwater modellers involved in predicting CSG projects’ impacts ([85,44]). To cope with the ‘prohibitive complexities’ of the large modelling area, these hydrogeologists have to reduce complexity through assumptions and exclusion of certain parameters. This, however, might cause a situational bias that can obscure critical thinking and cause a peripheral blindness towards unexpected findings ([86]: 29). The analogy is helpful insofar as it emphasises the difficult, yet necessary process of actively demarcating study areas and foci in contexts of increasing complexity. Ethnographers might similarly be subject to blind spots and the more or less conscious reduction of complexity within their knowledge claims.

We therefore conceptualised the ethnographic field with a high degree of reflexivity and focus on the Western Downs for a number of reasons. As the recently self-proclaimed ‘Energy Capital of Queensland’, the region hosts the majority of Queensland’s CSG projects. However, its post-European settlement history is first and foremost characterised by a burgeoning agricultural industry that depends on scarce surface and groundwater resources. As environmental anthropologists, we are particularly interested in the resulting multiplicity of land uses and the complex surface and subterranean resource contestations between extractive and agricultural industries. The specific characteristics of these contestations are highly variable across the region. For instance, agricultural land uses range from intensively cultivated irrigation farms in the east to larger, dryland cattle grazing properties further west. Geological characteristics also change, with the CSG-bearing underground layers located gradually deeper as one moves westwards. This affects the technical requirements and environmental impacts of CSG extraction. Heterogeneity is thus a central interest but also challenge for studying the sociocultural dimensions of unconventional energy developments, even when such research focuses on ‘local’ perspectives within extraction sites and only peripherally addresses trans-local infrastructure networks and global energy markets.

We responded to the challenges emerging from the different social scales by working with interlocutors across multiple regional sites. To ensure methodological rigour and to represent socio-cultural variations, we mapped out the region’s various actor groups and conflicting views in detail. Encounters with potential informants occur then not just by chance, but we also purposively approach members of those groups whose perspectives were not yet included in our research. Among these

actors are local landholders with and without gas infrastructure on their properties, regional town residents, Indigenous people, government and interest group representatives, anti-CSG activists, as well as urban residents, a variety of scientists and gas industry professionals. These engagements with diverse actor groups pose two important methodological challenges. First, we have to constantly re-negotiate our own position and remain flexible as we move across varying social domains and field sites. For instance, working with pro-CSG industry professionals as well as opposing landholders requires that we reflect on our attitudes, adjust our study foci, and adopt different ways of talking about CSG. Second, these actor categories are not mutually exclusive and, in fact, often overlap. However, employing them makes it practically possible to engage with the substantial social diversity we face in our study of CSG developments. At the same time, taking these heuristic categories for granted can obscure socio-cultural complexities and might skew research findings towards pre-existing conceptions of local community characteristics. This prompts us to consider our ethnographic fields iteratively and, as we do below, to reflect on the politics of representation in our research.

In regards to conflicting temporal scales, we found that CSG developments have introduced new forms of temporality in regions of extraction and beyond. These are most evident in associated risk debates. We particularly noted how interlocutors focus as much on the immediate and tangible risks of, for instance, increased local traffic as on the potential long-term implications of methane leaks from CSG infrastructure for climate change. Similarly, groundwater reductions caused by CSG extraction might affect the viability of agricultural businesses, but many farmers also linked this to notions of future food security and sustainability. The entanglements of immediate and anticipated risks indicate how CSG developments can alter referential and temporal horizons. Our methodological and analytical frameworks must reflect these shifting parameters of the past, present and future. This might involve studying up, down and sideways, but also studying ‘through’ policy and power structures ([37], esp. Ch 5). Considering policy responses to the temporal dimensions of anticipated risks is important since Australian states regulate unconventional gas extraction with markedly different attitudes. At the time of writing, Queensland hosts over 9,000 operational CSG wells and adopted a reactive rather than anticipatory ‘adaptive management’ regime [87]. On the other hand, five of Australia’s eight mainland states and territories follow a more precautionary approach and imposed moratoria on on-shore hydraulic fracturing. One state, Victoria, has banned ‘fracking’ permanently [88].

How can we incorporate these social variabilities into our ‘on-the-ground’ accounts? Further, how can we expand our frameworks to include studying backwards and forwards in time [77] to grasp, in our case, the new temporal dimensions of risk concerns? One way in which we have sought to do this is through comparative resource histories [80,85]. This allows us to incorporate resource temporalities, their corresponding teleologies, and ontological politics of the future into our research ([89]: 187, [90–92]). In doing so, we aim to complement ethnographic research with archival analyses to trace regional historical trajectories and envisioned energy futures.

3.2. Access and Attitude

Accessing multiple locations or nodes within the trans-local assemblages of energy developments is determined by practical, material and organisational constraints [77]. Issues such as funding, time and ability to travel, or international research visas all limit the potential scope of ethnographic research. However, even if studying up, down or sideways is practically possible, access to individuals or institutions can be key obstacles, particularly due to our partial ‘insiderness’ as at-home ethnographers. As already described elsewhere [93], we are often unable to gain official access to CSG companies’ personnel or their work sites. We also faced similar obstacles with some actors who opposed

CSG developments due to our institutional affiliations with a university that receives industry funding for a CSG research centre. In both cases, our own positionality and academic research become incorporated into broader political and moral debates. The politicisation of scientific research and knowledge politics are nothing new [44,94,95], but their practical implications for access to actors within the complex socio-cultural webs of energy developments must be considered and, if possible, addressed.

Research in our own highly industrialised society thus requires us to adjust our attitude towards the constitution of the ethnographic field and relationship with research participants. However, attempts to study sideways and up, as well as to follow a para-ethnographic and collaborative approach pose their own problems. For example, we met numerous landholders with CSG infrastructure on their land whose Conduct and Compensation Agreements included confidentiality clauses that can prevent them from discussing important aspects of their experiences. Such restrictions and secrecy can similarly be found among industry and government staff with strict employment contracts. Crucial aspects of social practice can then be closed off from enquiry.

This is, once again, not surprising. Rather, these aspects of secrecy and restriction are themselves revealing of the energy research field. However, are ethnographers prepared to, as we did, attempt direct engagements with ‘more powerful’ or constrained interlocutors despite less than favourable research relations? Or do they confine efforts to those more willing to engage, potentially at the cost of more valuable insights? In this sense, ethnography is indeed “an art of the possible” [30], but this should not prevent ethnographers from reflecting on how they might expand the realm of possibility.

3.3. Ethics and Methods

We have consistently sought to undertake research with government and industry staff. For the latter, most of our requests were denied or evaded. One CSG industry representative replied via email that the company “only supplies details of its operations in a research capacity to its research partners which have contract agreements with us, including strict protocols about how and where the information is used”. This exchange illustrates a central dilemma of collaboratively studying up and sideways. We certainly wish to incorporate industry or government accounts. Yet, how can we do so in ethically and professionally sound ways? While we always give research participants the option to withdraw from the study at any time and provide them with access to the published research, we do not grant control over our research outputs to third parties. This, however, can limit the ability to officially work with some industry or government actors. Ethical challenges thus emerge when we reach the “glass ceiling for ethnographers” ([38]: 115). We addressed this challenge by also seeking informal, off-the-record engagements with industry and government staff.

Based at a public university, we intend our research to be transparent, in the public interest and widely accessible. However, if we enter into contractual agreements with CSG companies or governments, our research scope or outputs may become subject to restrictions. At the same time, revealing the lifeworlds of those more willing to engage, such as local community members or activist groups, also presents challenges [93]. Such uneven secrecy can, as Price ([96]: 6) notes, “ethically transform ethnographic practices, as secrecy always carries the danger of transmuting ethnographers into spies”. Energy research must then address ethical considerations [36,97], including critical evaluations of unequal research relations and ethnographers’ responsibilities. It is important to reflect on what knowledge we do and do not produce through ethnographic research [98,99].¹

¹ See also the vociferous debate about this issue in the context of ethnographic research on the Porgera gold mine in Papua New Guinea (Coumans [100] and Burton’s [101] response).

Classic anthropological pre-occupation with participant observation and pro-longed being there may be difficult in multi-sited energy research. We therefore agree with Gusterson's ([38]: 116) suggestion that participant observation may at times be de-emphasised in favour of "polymorphous engagement", which means "interacting with informants across a number of dispersed sites, not just in local communities, and sometimes in virtual form; and it means collecting data eclectically from a disparate array of sources in many different ways". We similarly approach our research with flexibility. To record the diverse responses to CSG developments we conduct interviews and briefer periods of participant observation in multiple localities across and beyond our study region, and purposively contact potential interlocutors. This approach is also informed by notions of focused [102] and short-term theoretically informed ethnographies [103]. Some anthropologists might regard this as 'ethnography lite', but we experienced such a multi-sited ethnography as highly insightful.

Further, in studying up and sideways with government and industry representatives we accept that 'anthropology by immersion' may need to be substituted with 'anthropology by appointment' ([77]: 34). If ethically justifiable, these encounters usually involve shorter, more structured interviews and little participant observation. We might also have informal conversations with these interlocutors in social settings outside the workplace. Additionally, our research involves a substantial amount of secondary data that can illustrate corporate or government logics ([11]: 37). Among other materials, we examine industry reports, written public submissions to proposed government bills, and transcripts of Australian Senate hearing testimonies [83,85]. This approach allows for in-depth insights and also provides broader contextual understandings that are crucial in comprehending the emerging complexities of trans-local energy developments.

4. Ethnography, Representation and Societal Debate

Increasing numbers of social researchers stress that the challenges emerging from energy developments and climate change are not just techno-scientific but also socio-cultural [4,104–106]. Ethnographies are thus required if we want to understand these diverse challenges more holistically. Following our own research on CSG projects and environmental risks, we emphasise the decidedly political character of the resulting social controversy. The anthropological knowledge we produce through ethnographic engagements is thus influenced by, and might become part of, the broader societal debates over the impacts of resource extraction and envisioned energy futures. This poses ethical questions that correspond to the methodological challenges we outlined above. We refer in particular to the issue of representation in analyses and publications. Whose perspectives do we portray as 'local' within heterogeneous communities where various categories of actors, including government and industry representatives, might claim autochthonous status and related moral authority (see Image 1)? Whose voices remain silent or are deliberately sought to be excluded from societal debates over resource and energy developments (cf. [107])?

These questions can carry profound implications. For instance, in September 2014 the Queensland Government passed legislative changes related to the *Mineral and Energy Resources (Common Provisions) Bill 2014*. Through a series of amendments, the Government severely restricted the potential for public challenges to future mining developments. It confined the right to legally object to a specific development to people who own land within the proposed mining lease. Nearby residents with concerns over a mine's regional groundwater impacts or members of the public who oppose potential environmental risks were excluded from possible appeal to Queensland's Land Court [108]. After public backlash, and a change of government, these objection rights were restored in September 2016. This example highlights that ethnographers must consider the politics of representation in these contexts—methodologically and with potential societal implications in mind. This concerns in particular the status of legitimate 'local' actors

and those excluded. In this case, nearby landholders might bear environmental risks without the right to legally challenge resource developments. Attaching objection rights to property ownership and tenure can also exclude historically dispossessed Australian Aboriginal communities that have customary connections to, and might claim native title over, certain areas of land despite long-term physical absence. The politics of representation must therefore be considered carefully and ethnographers should reflect on how their research might possibly address problematic situations.

In our research, these representational challenges manifest ethnographically and when we write up findings. CSG developments have brought new dilemmas and social dynamics to the region of extraction [109]. Some landholders and town residents embrace the economic and material benefits of projects while others fiercely resist them or have moved away from the region altogether due to environmental and health concerns [82,83,85]. Proposed and operational CSG developments have increased value conflicts and divided some communities (cf. [110,111]), exacerbated existing stigmatisation and identity politics [112,113], but also created historically unusual alliances between, for instance, farmers and environmental activist groups [114]. In this context, we must self-reflexively ask who our 'natives of choice' are and how we properly situate their responses within ongoing developments and shifting attitudes and priorities. This reinforces our earlier point about social heterogeneity and the need to avoid assumptions about locality and community. At the same time, ethnographers also have the opportunity—and we believe responsibility—to attend to silent voices within CSG debates. For example, Aboriginal Australian perspectives on CSG have so far received comparably little anthropological attention (cf. [80,115,116]). This silence and the problem of representation can, of course, also emerge from constraints in studying up or sideways. For example, are the voices of petroleum reservoir engineers, drilling operators, gas traders, corporate vice-presidents or other more 'powerful' social groups sufficiently written into the ethnographies of Queensland's unconventional gas developments? We would say 'no'.

The politics of representation must therefore be critically assessed more broadly. Especially the multi-local and transboundary character of CSG projects raises challenges in this regard. Within our research in Queensland, we reflect on who we give voice in the anthropological accounts we produce, especially once we move beyond the demarcated geographic and social boundaries of a single locality. Another example from a proposed CSG development in the southerly adjacent State of New South Wales illustrates this point further. During the community consultation process for the project's Environmental Impact Statement, the overseeing Department received in excess of 23,000 public submissions of which 500 came from the local government area, 18,000 from within the State, 5000 from across Australia and 200 from overseas [117]. The large number of non-local submissions indicated that unconventional energy developments not merely spark debates locally. The label of 'Not In My Backyard' (NIMBY) perspectives, often evoked to depreciate local concerns as irrational, ignorant of scientific facts and selfish [118], has therefore limited explanatory potential in the case of CSG and other large-scale energy developments. This is also the finding of a survey conducted across our study region, which indicates that landholder concerns are not limited to their immediate surroundings but extend regionally [119]. We reflected on whether our ethnographic accounts truthfully represent those concerns and believe that ethnographers must ask holistically "[w]hat does an analytical framework allow us to see?" ([36]: 5) and what aspect may remain under-presented.

The trans-local and temporal characteristics of CSG developments resonate with broader societal debates about energy and climate change. Anthropologists who engage with these issues insist on the expansion of sometimes taken-for-granted methodological and epistemological positions [105,106,120,121]. This raises questions regarding the representation of ethnographic insights. Taking the wider, indeed global, socio-ecological implications of CSG and energy developments



Image 1. Questions of belonging and authority in resource contests: an autochthonous civil construction company in the Western Downs? (Photo courtesy of UQ MOOC World101x: Anthropology of Current World Issues).

seriously, it is undeniable that not just ‘local’ actors near extraction sites must be considered. As citizens, we are all incorporated into energy networks and face the challenges of climate change—albeit not in similar risk positions. How, then, should ethnographers weigh local voices against those of the larger domestic or international public? And in what ways can ethnographies communicate insights into complex lifeworlds so that they are accessible to those without case-specific expertise or outside social scientific professions? These questions illustrate how, indeed, “[r]epresentation and the epistemological problems inherent to it are key anthropological problems of the twenty-first century” ([57]: 1). We would add that these epistemological challenges concern ethnographic research and societal debates about energy and climate change more generally.

5. Conclusion: Intellectual Responsibilities, Reflexivity and Collaboration

The brief overview of reflexive developments in anthropology and their illustration in our own research demonstrate how the contours of much contemporary ethnographic research are open-ended and malleable. We have highlighted these developments for the benefit of cross-disciplinary discussion and ethnographic practice in energy research.

The scale and reach of energy across the world, like that of oil and gas, almost unavoidably produce among researchers a sense of ‘intellectual vertigo’ ([78]: 5 & 6). In contrast to the approach presented in some social scientific and industry studies, the ‘field’, the ‘local’ and ‘the community’ are not self-evident in complex multi-sited energy developments. Ethnographers must therefore actively limit the research scope, demarcate the field and think about positionality and the politics of representation in their fieldwork and writing. We have argued that this process poses a number of methodological, intellectual and ethical challenges that need to be considered.

Nearly fifty years ago, Nader ([60]: 303) noted that “[a]nthropologists of the future will have a greater responsibility for what they choose to study as well as how they study”. This also applies to other social researchers who employ ethnographic methods in the study of energy developments and climate change. While some engaged anthropologists have argued for profound moral and political responsibilities to actively advocate for societal change in this regard (e.g. [122]), we intend to conclude by highlighting relevant methodological questions and responsibilities. In particular, how can ethnographers sustain a sensibility towards the specific conditions of locally-lived experiences, while simultaneously studying up, sideways and through

the inseparable webs of global interconnections? And, what is the position and role of ethnographers who are, to varying degrees, drawn into societal debates about energy and climate change?

We do not mean to propose a definite framework to answer these questions—especially since they are highly context-dependent. Instead, we suggest more generally that ethnographers must approach their field site(s) with a high degree of reflexivity regarding the methodological issues raised above. By reflexivity we mean “simply a therapeutic project of identifying and resisting the suppression of critical self-awareness of our own knowledge practices that is encouraged by intellectual professionalism” ([123]: 39). Such an agenda includes the awareness that social research, and ethnography in particular, is always shaped by and to some extent reproduces the researcher’s wider socio-historical contexts. Based on the challenges in our own ethnographic work, we agree with Davies ([39]: 5–6) that contemporary ethnographers should incorporate the complexities of different standpoints, be aware of the intellectual dangers of simplistic meta-narratives, and recognise the epistemic authority inherent in their ethnographic accounts. At the same time, ethnographers must also seek methodologically and ethically sound ways to construct truthful knowledge claims, without succumbing to the *ad infinitum* and debilitating critiques that emerged during the postmodern crisis of representation [39]. De Sardan’s ([124]: 1–20) emphasis on ‘rigorous approximations’ and ‘moral epistemologies’ might provide a starting point for such an approach.

We also argue that ethnographers need to acknowledge their personal and disciplinary limitations, which inevitably impact the research process. Interdisciplinary and collaborative research can be one way to maintain and increase ethnographies’ much-needed analytical potential. Doing so in the context of mounting energy and climate challenges involves, as Brondizio [125] notes, recognising that the “complexity of social-environmental problems inherently calls for complementary forms of knowledge, views and values, approaches and levels of analysis”. The concept of collaborative ethnographies with research participants is already well-developed [71–74], and a focus on interdisciplinary collaboration might further improve the efficacy and impact of ethnographic research. This is not merely an intellectual and theoretical recommendation, but an area of future potential that is important to the ways in which ethnographic knowledge might find its way into broader policy debates and back into our participants’ lifeworlds. Precisely how and between whom interdisciplinary collaborations should and can occur will depend on the issue at hand (e.g., [71,126]). In the case of CSG developments, this might manifest as research projects between anthropologists, economists, agricultural

scientists, specialist engineers and hydrogeologists. The challenge is to produce knowledge that is valued equally by all parties, mutually comprehensible and, if that is the aim, suitable for the purpose of policy-making.

The intellectual responsibility for ethnographers then lies in critically reflecting on their methodological approaches and practices of representation. This includes a realisation that studying up, down and sideways at home likely involves “to fully integrate our subjects’ analytical acumen and insights to define the issues at stake in our projects as well as the means by which we explore them” ([71]: 86). If we wish to understand in a fulsome manner the human dimensions of energy, all researchers need to reflect on what Lutzenhiser and Shove [127] describe as the intellectual and institutional ‘blind spots’ in conventional techno-economic thinking, which can mask the characteristics of energy as a socio-technical system. These views can prevent full appreciation of the value of ethnographic and other qualitative research by non-social scientists. We therefore concur with Sovacool’s ([4]: 2) rationale for launching *Energy Research & Social Science* and his call for “more human-centred research methods, interdisciplinary collaborations, and comparative analysis”. To realise this agenda, however, it is necessary to critically reflect on the approach, the politics of representation, and the methodological challenges social scientists face when studying energy ethnographically.

References

- [1] GasFields Commission Queensland, On New Ground: Lessons from Development of the World’s First Export Coal Seam Gas Industry. Report, Available online: (2017) (Accessed 25 July 2017), <http://www.gasfieldscommissionqld.org.au/resources/documents/Report%20Learnings%20FINAL.PDF>.
- [2] B. Kapferer, Anthropology and the dialectic of enlightenment: a discourse on the definition and ideals of a threatened discipline, *Aust. J. Anthropol.* 18 (1) (2007) 72–94.
- [3] A. Giddens, In Defence of Sociology: Essays, Interpretations & Rejoinders, Polity Press, Cambridge, 1996.
- [4] B. Sovacool, What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda, *Energy Res. Soc. Sci.* 1 (1) (2014) 1–29.
- [5] M. Hansen, B. Hauge, Scripting, control, and privacy in domestic smart grid technologies: insights from a Danish pilot study, *Energy Res. Soc. Sci.* 25 (2017) 112–123.
- [6] S. Moore, Evaluating the energy security of electricity interdependence: perspectives from Morocco, *Energy Res. Soc. Sci.* 24 (2017) 21–29.
- [7] L. Schick, C. Gad, Flexible and inflexible energy engagements—a study of the Danish smart grid strategy, *Energy Res. Soc. Sci.* 9 (2015) 51–59.
- [8] A. Wagner, T. Grobelski, M. Haremski, Is energy policy a public issue? Nuclear power in Poland and implications for energy transitions in Central and East Europe, *Energy Res. Soc. Sci.* 13 (2016) 158–169.
- [9] A. Jagadish, P. Dwivedi, In the hearth, on the mind: cultural consensus on fuelwood and cookstoves in the middle Himalayas of India, *Energy Res. Soc. Sci.* 37 (2018) 44–51.
- [10] L. Lutzenhiser, Through the energy efficiency looking glass, *Energy Res. Soc. Sci.* 1 (2014) 141–151.
- [11] A. Gupta, J. Ferguson (Eds.), *Anthropological Locations: Boundaries and Grounds of a Field Science*, University of California Press, Berkeley, Los Angeles & London, 1997.
- [12] J. Biehl, Ethnography in the way of theory, *Cult. Anthropol.* 28 (4) (2013) 573–597.
- [13] G. da Col, Two or three things i know about ethnographic theory. Debate collection pp. 1–69, *Hau: J. Ethnogr. Theory* 7 (1) (2017) 1–8.
- [14] T. Ingold, Anthropology is not ethnography, *Proc. Br. Acad.* 154 (2008) 69–92.
- [15] T. Ingold, That’s enough about ethnography!, *Hau: J. Ethnogr. Theory* 4 (1) (2014) 383–395.
- [16] S. MacDougall, Enough about ethnography: an interview with tim ingold, *Dialogues, Cultural Anthropology*, (2016) Available online: <https://culanth.org/fieldsights/841-enough-about-ethnography-an-interview-with-tim-ingold> . (Accessed 20 November 2017).
- [17] L. Nader, Ethnography as theory, *J. Ethnogr. Theory* 1 (1) (2011) 211–219.
- [18] M. Bloch, Anthropology is an odd subject: studying from the outside and from the inside, *Hau: J. Ethnogr. Theory* 7 (1) (2017) 33–43.
- [19] H.F. Walcott, *Ethnography: A Way of Seeing*, AltaMira Press, Lanham, 2008.
- [20] P. Atkinson, A. Coffey, S. Delamont, J. Lofland, L. Lofland (Eds.), *Handbook of Ethnology*, SAGE Publications, London, 2007.
- [21] S. Taylor (Ed.), *Ethnographic Research: A Reader*, SAGE, London, 2001.
- [22] K. O’Reilly, *Ethnographic Methods*, Routledge, London & New York, 2012.
- [23] P. Willis, M. Trondman, Manifesto for ethnography, *Ethnography* 1 (1) (2000) 5–16.
- [24] H.R. Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, AltaMira Press, Lanham & Oxford, 2006.
- [25] J. Clifford, G. Marcus (Eds.), *Writing Culture: The Poetics and Politics of Ethnography*, University of California Press, Berkeley, Los Angeles & London, 1986.
- [26] C. Geertz, *Works and Lives: The Anthropologist as Author*, Stanford University Press, Stanford, 1988.
- [27] C.W. Watson (Ed.), *Being There: Fieldwork in Anthropology*, Pluto Press, London, 1999.
- [28] A. Cohen, *The Symbolic Construction of Community*, Horwood, Chichester, 1985.
- [29] K.F. Olwig, K. Hastrup (Eds.), *Siting Culture: The Shifting Anthropological Object*, Routledge, London & New York, 1997.
- [30] U. Hannerz, Being there... and there... and there!: Reflections on multi-site ethnography, *Ethnography* 4 (2) (2003) 201–216.
- [31] G.E. Marcus, Contemporary problems of ethnography in the modern world system, in: J. Clifford, G. Marcus (Eds.), *Writing Culture: The Poetics and Politics of Ethnography*, University of California Press, Berkeley, Los Angeles & London, 1986.
- [32] G.E. Marcus, Ethnography in/of the world system: the emergence of multi-sited ethnography, *Annu. Rev. Anthropol.* 24 (1995) 95–117.
- [33] A. Ong, S.J. Collier (Eds.), *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, Blackwell Publishing, Malden, Oxford & Carlton, 2005.
- [34] A.L. Tsing, *Friction: An Ethnography of Global Connection*, Princeton University Press, Princeton & Oxford, 2005.
- [35] M.S. Fisher, G. Downey (Eds.), *Frontiers of Capital: Ethnographic Reflections on the New Economy*, Duke University Press, Durham & London, 2006.
- [36] J. Smith, M.M. High, Exploring the anthropology of energy: ethnography, energy and ethics, *Energy Res. Soc. Sci.* 30 (2017) 1–7.
- [37] C. Shore, S. Wright, D. Però (Eds.), *Policy Worlds: Anthropology and the Analysis of Contemporary Power*, Berghahn Books, New York & Oxford, 2011.
- [38] H. Gusterson, Studying up revisited, *Pol. Leg. Anthropol. Rev.* 20 (1) (1997) 114–119.
- [39] C.A. Davies, *Reflexive Ethnography: A Guide to Researching Selves and Others*, Routledge, London & New York, 2007.
- [40] J. Ruby (Ed.), *A Crack in the Mirror: Reflexive Perspectives in Anthropology*, University of Pennsylvania Press, Philadelphia, 1982.
- [41] B. Leistle (Ed.), *Anthropology and Alterity: Responding to the Other*, Routledge, New York & London, 2017.
- [42] J. Morton, Anthropology at home in Australia, *Aust. J. Anthropol.* 10 (3) (1999) 243–258.
- [43] World Energy Council, *World Energy Resources: Unconventional Gas, a Global Phenomenon. Study Report*, Available online: (2016) (Accessed 24 October 2017), <https://www.worldenergy.org/publications/2016/unconventional-gas-a-global-phenomenon/>.
- [44] M. Espig, K. de Rijke, Unconventional gas developments and the politics of risk and knowledge in Australia, *Energy Res. Soc. Sci.* 20 (2016) 82–90.
- [45] T.W. Pearson, Frac sand mining in Wisconsin: understanding emerging conflicts and community organizing, *Cult. Agric. Food Environ.* 35 (1) (2013) 30–40.
- [46] A. Willow, S. Wylie, Energy, environment, engagement: encounters with hydraulic fracturing, *J. Pol. Ecology* 21 (2014) 222–348 special section.
- [47] M. Alvesson, At-home ethnography: struggling with closeness and closure., in: S. Ybema, D. Yanow, H. Wels, F. Kamsteeg (Eds.), *Organizational Ethnography: Studying the Complexities of Everyday Life*, SAGE Publications, London, 2009.
- [48] A. Jackson (Ed.), *Anthropology at Home*, Tavistock, London, 1987.
- [49] D.A. Messerschmidt (Ed.), *Anthropologists at Home in North America: Methods and Issues in the Study of One’s Own Society*, Cambridge University Press, Cambridge, 1981.
- [50] L. Kirpitchenko, L. Voloder, “Insider Research Method: The Significance of Identities in the Field.” *SAGE Research Methods Cases*, Available online: (2014) . (Accessed 18 March 2018) <https://doi.org/10.4135/978144627305014533940>.
- [51] L. Voloder, Autoethnographic challenges: confronting self, field and home, *Aust. J. Anthropol.* 19 (1) (2008) 27–40.
- [52] B. Malinowski, *Argonauts of the Western Pacific*, Routledge & Kegan Paul Ltd., London, 1922.
- [53] R. Handler, Cultural politics in New Zealand, *Anthropol. Today* 6 (3) (1990) 8.
- [54] D.S. Trigger, Shared country, different stories: a post-settler vignette, in: J.-C. Verstraete, D. Hafner (Eds.), *Land and Language in Cape York Peninsula and the Gulf Country*, John Benjamins Publishing Company, Amsterdam, 2016.
- [55] J. Clifford, Taking identity politics seriously: The contradictory, stony ground..., in: P. Gilroy, L. Grossberg, A. McRobbie (Eds.), *Without Guarantees: Essays in Honour of Stuart Hall*, Verso Press, London, 2000.
- [56] A. Gupta, J. Ferguson, Beyond “culture”: space, identity, and the politics of difference, *Cult. Anthropol.* 7 (1) (1992) 6–23.
- [57] G. Vargas-Cetina (Ed.), *Anthropology and the Politics of Representation*, The University of Alabama Press, Tuscaloosa, 2013.
- [58] D. Hymes (Ed.), *Reinventing Anthropology*, Pantheon Books, New York, 1972.
- [59] G.E. Marcus, M.M. Fischer, *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*, University of Chicago Press, Chicago & London, 1986.
- [60] L. Nader, Up the anthropologist- perspectives gained from studying Up, in: D. Hymes (Ed.), *Reinventing Anthropology*, Pantheon Books, New York, 1972.
- [61] L. Nader, Afterword: maximizing anthropology, in: S. Strauss, S. Rupp, T. Love (Eds.), *Cultures of Energy: Power, Practices, Technologies*, Left Coast Press, Walnut Creek, 2013.
- [62] R. Stryker, R.J. Gonzalez (Eds.), *Up, Down and Sideways: Anthropologists Trace the Pathways of Power*, Berghahn Books, New York & Oxford, 2014.
- [63] J. Abbink, T. Salverda (Eds.), *The Anthropology of Elites: Power, Culture, and the*

- Complexities of Distinction, Palgrave Macmillan, New York, 2013.
- [64] R. Hertz, J.B. Imber (Eds.), *Studying Elites Using Qualitative Methods*, SAGE Publications, London, 1995.
 - [65] C. Shore, S. Nugent (Eds.), *Elite Cultures: Anthropological Perspectives*, Routledge, London & New York, 2002.
 - [66] M. Cefkin (Ed.), *Ethnography and the Corporate Encounter: Reflections on Research in and of Corporations*, Berghahn Books, New York & Oxford, 2009.
 - [67] C. Garsten, A. Nyqvist (Eds.), *Organisational Anthropology: Doing Ethnography in and Among Complex Organisations*, Palgrave Macmillan, New York, 2013.
 - [68] G. Urban, K.-N. Koh, *Ethnographic research on modern business corporations*, *Annu. Rev. Anthropol.* 42 (2013) 139–158.
 - [69] M. Welker, *Enacting the Corporation: An American Mining Firm in Post-Authoritarian Indonesia*, University of California Press, Berkeley, 2014.
 - [70] M. Welker, D. Partridge, R. Hardin, *Corporate lives: new perspectives on the social life of the corporate form*. Introduction to special issue, *Curr. Anthropol.* 52 (S3) (2011) S3–S16.
 - [71] D.R. Holmes, G.E. Marcus, *Collaboration today and the re-imagining of the classic scene of fieldwork encounter*, *Collab. Anthropol.* 1 (2008) 81–101.
 - [72] L.E. Lassiter, *Collaborative ethnography and public anthropology*, *Curr. Anthropol.* 46 (1) (2005) 83–106.
 - [73] L.E. Lassiter, *Editor's introduction*, *Collab. Anthropol.* 1 (2008) vii–xii.
 - [74] J. Rappaport, *Beyond participant observation: collaborative ethnography as theoretical innovation*, *Collab. Anthropol.* 1 (2008) 1–31.
 - [75] S. Coleman, P. Collins (Eds.), *Locating the Field: Space, Place and Context in Anthropology*, Berg, Oxford & New York, 2006.
 - [76] S. Pink, H. Horst, J. Postill, L. Hjorth, T. Lewis, J. Tacchi, *Digital Ethnography: Principles and Practice*, SAGE, London, 2015.
 - [77] U. Hannerz, *Studying down, up, sideways, through, backwards, forwards, away and at home: reflections on the field worries of an expansive discipline*, in: S. Coleman, P. Collins (Eds.), *Locating the Field: Space, Place and Context in Anthropology*, Berg, Oxford & New York, 2006.
 - [78] H.C. Appel, A. Mason, M. Watts (Eds.), *Subterranean Estates: Life Worlds of Oil and Gas*, Cornell University Press, 2015.
 - [79] T.H. Eriksen, *Scales of environmental engagement in an industrial town: glocal perspectives from Gladstone, Queensland*, *Ethnos* (2016) 1–15 Published online 28 April 2016.
 - [80] K. de Rijke, P. Munro, M. Zurita, *The Great Artesian Basin: a contested resource environment of subterranean water and coal seam gas in Australia*, *Soc. Nat. Resour.* 29 (6) (2016) 696–710.
 - [81] *GasFields Commission Queensland, Land Access Policy Framework, Website section*. Available online: (2016) . (Accessed 02 March 2017) <http://www.gasfieldscommissionqld.org.au/gasfields/land-access/land-access-policy-framework.html>.
 - [82] K. de Rijke, *The agri-gas fields of Australia: black soil, food, and unconventional gas*, *Cult. Agric. Food Environ.* 35 (1) (2013) 41–53.
 - [83] K. de Rijke, *Coal seam gas and social impact assessment: an anthropological contribution to current debates and practices*, *J. Econ. Soc. Policy* 15 (2013) 3. Article 3.
 - [84] D.J. Turton, *Unconventional gas in Australia: towards a legal geography*, *Geogr. Res.* 53 (1) (2015) 53–67.
 - [85] M. Espig, *Getting the Science Right: Queensland's Coal Seam Gas Development and the Engagement With Knowledge, Uncertainty and Environmental Risks*. Doctoral Thesis, University of Queensland, School of Social Science, 2018.
 - [86] O.H. Pilkey, L. Pilkey-Jarvis, *Useless Arithmetic: Why Environmental Scientists Can't Predict The Future*, Columbia University Press, New York, 2007.
 - [87] N. Swayne, *Regulating coal seam gas in Queensland: lessons in an adaptive environment management approach*, *Environ. Plan. Law J.* 29 (2) (2012) 163–185.
 - [88] I. Cronshaw, R. Quentin Grafton, *A tale of two states: development and regulation of coal bed methane extraction in Queensland and New South Wales, Australia*, *Resour. Policy* 50 (2016) 253–263.
 - [89] E.E. Ferry, *Claiming futures*, *J. R. Anthropol. Inst.* 22 (S1) (2016) 181–188.
 - [90] E.E. Ferry, M.E. Limbert (Eds.), *Timely Assets: The Politics of Resources and Their Temporalities*, School for Advanced Research Press, Santa Fe, 2008.
 - [91] G. Wieszalyns, *Anticipating oil: the temporal politics of a disaster yet to come*, *Sociol. Rev.* 62 (S1) (2014) 211–235.
 - [92] G. Wieszalyns, *A doubtful hope: resource affect in a future oil economy*, *J. R. Anthropol. Inst.* 22 (S1) (2016) 127–146.
 - [93] M. Espig, K. de Rijke, *Navigating coal seam gas fields: ethnographic challenges in Queensland, Australia*, *Pract. Anthropol.* 38 (3) (2016) 44–45.
 - [94] R.A. Pielke Jr., *The Honest Broker: Making Sense of Science in Policy and Politics*, Cambridge University Press, Cambridge & New York, 2007.
 - [95] F.D. Rubio, P. Baert (Eds.), *The Politics of Knowledge*, Routledge, London & New York, 2012.
 - [96] D. Price, *Anthropology and the wages of secrecy*, *Anthropol. News* 48 (3) (2007) 6–7.
 - [97] B. Sovacool, *Energy and Ethics: Justice and the Global Energy Challenge*, Palgrave Macmillan, Basingstoke, 2013.
 - [98] P. Caplan (Ed.), *The Ethics of Anthropology: Debates and Dilemmas*, Routledge, London & New York, 2003.
 - [99] L. Josephides (Ed.), *Knowledge and Ethics in Anthropology: Obligations and Requirements*, Bloomsbury, London & New York, 2015.
 - [100] C. Coumans, *Occupying spaces created by conflict: anthropologists, development NGOs, responsible investment, and mining*, *Curr. Anthropol.* 52 (S3) (2011) 29–43.
 - [101] J. Burton, *Agency and the «Avatar» narrative at the Porgera gold mine, Papua New Guinea*, *Journal de la Société des Océanistes* 138–139 (2014) 37–52.
 - [102] H. Knoblauch, *Focused ethnography*, *Forum: Qual. Soc. Res.* 6 (3) (2005) Art. 44.
 - [103] S. Pink, J. Morgan, *Short-term ethnography: intense routes to knowing*, *Symb. Interact.* 36 (3) (2013) 351–361.
 - [104] R.S. Emmett, D.E. Nye, *The Environmental Humanities: A Critical Introduction*, MIT Press, Cambridge, 2017.
 - [105] L. Nader (Ed.), *The Energy Reader*, Wiley-Blackwell, Chichester, 2010.
 - [106] I. Szeman, D. Boyer (Eds.), *Energy Humanities: An Anthology*, John Hopkins University Press, Baltimore, 2017.
 - [107] A. Mercer, K. de Rijke, W. Dressler, *Silences in the boom: coal seam gas, neoliberalizing discourse, and the future of regional Australia*, *J. Pol. Ecol.* 21 (2014) 279–302.
 - [108] C. McGrath, *Mining coup in Queensland removes public objection rights*, *The Conversation*, (2014) 22 September 2014, available online: <https://theconversation.com/mining-coup-in-queensland-removes-public-objection-rights-31737> . (Accessed 1 November 2017).
 - [109] A. Walton, R. McCrea, R. Leonard, *The 2016 CSIRO Community Wellbeing and Responding to Change Survey: Western Downs Region, Queensland – Changes between 2014 and 2016 in the Context of Coal Seam Gas Development*. CSIRO Technical Report, CSIRO, Australia, 2016.
 - [110] E. Grubert, W. Skinner, *A town divided: Community values and attitudes towards coal seams development in Gloucester, Australia*, *Energy Res. Soc. Sci.* 30 (2017) 43–52.
 - [111] M. Sherval, K. Hardiman, *Competing perceptions of the rural idyll: responses to threats from coal seam gas development in Gloucester, NSW, Australia*, *Aust. Geogr.* 45 (2) (2014) 185–203.
 - [112] M. Makki, *Coal Seam Gas Development and Community Conflict: A Comparative Study of Community Responses to Coal Seam Gas Development in Chinchilla and Tara, Queensland*. Doctoral Thesis, University of Queensland, School of Communication and Arts, 2015.
 - [113] M. Makki, K. van Vuuren, *Place, identity and stigma: blocks and the, blockies of Tara, Queensland, Australia*, *GeoJournal* (2016) published online 15 July 2016.
 - [114] R.M. Colvin, G.B. Witt, J. Lacey, *Strange bedfellows or an aligning of values? Exploration of stakeholder values in an alliance of concerned citizens against coal seam gas mining*, *Land Use Policy* 42 (2015) 392–399.
 - [115] H. Norman, *Coal mining and coal seam gas on Gomeroi country: sacred lands, economic futures and shifting alliances*, *Energy Policy* 99 (2016) 242–251.
 - [116] D. Trigger, J. Keenan, K. de Rijke, W. Rifkin, *Aboriginal engagement and agreement-making with a rapidly developing resource industry: coal seam gas development in Australia*, *Extr. Ind. Soc.* 1 (2) (2014) 176–188.
 - [117] *New South Wales (NSW) Government, Community Views on Narrabri Gas Project to be Addressed*, 7 June 2017, available online: Department of Planning and Environment Media Response, 2017 . (Accessed 1 November 2017) <http://www.planning.nsw.gov.au/News/2017/Community-views-on-Narrabri-Gas-Project-to-be-addressed>.
 - [118] P. Devine-Wright (Ed.), *Renewable Energy and the Public: from NIMBY to Participation*, Routledge, London, 2010.
 - [119] *AgForce, Landholder CSG & Mining Survey – 2017 Landholder Sentiment Survey Results. Webinar and Survey Summary*, Available online: (2017) . (Accessed 04 July 2017) http://www.agforward.org.au/index.php?tgPage=&page_id=202.
 - [120] S.A. Crate, M. Nuttall (Eds.), *Anthropology and Climate Change: From Encounters to Action*, Routledge, Abingdon & New York, 2009.
 - [121] S.A. Crate, M. Nuttall (Eds.), *Anthropology and Climate Change: From Actions to Transformations*, Routledge, New York & Abingdon, 2016.
 - [122] H. Baer, *Academic and political responsibility in confronting climate change: a personal trajectory*, *Pract. Anthropol.* 34 (4) (2012) 39–43.
 - [123] D. Boyer, *Of dialectical Germans and dialectical ethnographies: notes from an engagement with philosophy*, in: M. Harris (Ed.), *Ways of Knowing: Anthropological Approaches to Crafting Experience and Knowledge*, Berghahn Books, New York & Oxford, 2007.
 - [124] J.-P.O. de Sardan, *Epistemology, Fieldwork, and Anthropology*, Palgrave Macmillan, New York, 2015.
 - [125] E.S. Brondizio, *“Interdisciplinarity as Collaborative Problem Framing.” Items, Digital Forum of the Social Science Research Council*, 17 October 2017, available online: (2017) . (Accessed 22 November 2017) <http://items.ssrc.org/interdisciplinarity-as-collaborative-problem-framing/>.
 - [126] E.S. Brondizio, K. O'Brien, X. Bai, F. Biermann, W. Steffen, F. Berkhout, C. Cudennec, M.C. Lemos, A. Wolfe, J. Palma-Olivera, C.-T.A. Chen, *Re-conceptualizing the anthropocene: a call for collaboration*, *Global Environ. Change* 39 (2016) 318–327.
 - [127] L. Lutzenhiser, E. Shove, *Contracting knowledge: the organizational limits to interdisciplinary energy efficiency research and development in the US and the UK*, *Energy Policy* 27 (4) (1999) 217–227.
 - [128] K. de Rijke, *Drilling down comparatively: Resource histories, subterranean unconventional gas and diverging social responses in two Australian regions*, in: T.H. Eriksen, R.J. Pijpers (Eds.), *Mining Encounters: Extractive Industries In An Overheated World*, Pluto Press, London, forthcoming.